

A NEW SPECIES OF THE GENUS *KIMULA* (OPILIONES, MINUIDAE) FROM THE DOMINICAN REPUBLIC

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ABSTRACT. *Kimula cokendolpheri* new species is described from the Central Range of the Dominican Republic, West Indies. It is the first non-fossil species of this genus recorded from Hispaniola.

Keywords: Opilionids, *Kimula*, West Indies, Dominican Republic

The Antillean genus *Kimula* Goodnight & Goodnight 1942 includes species that are found on the islands of Puerto Rico (*K. elongata* Goodnight & Goodnight 1942), Cuba (*K. tuberculata* Goodnight & Goodnight 1943, *K. levii* Šihavý 1969, *K. banksi* Šihavý 1969, *K. goodnightorum* Šihavý 1969, *K. turquensis* Šihavý 1969; and *K. botosaneanui* Avram 1973) (Cokendolpher & Camilo-Rivera 1989). On St. Johns, U.S. Virgin Islands, it is represented by an undescribed species, and in the Dominican Republic a female of *Kimula*? was found in amber that has a confirmed date of 25–40 MYA (Cokendolpher & Poinar 1992).

Kimula cokendolpheri new species is the first known living species of the genus *Kimula* from Hispaniola. However, if speciation of this group in Hispaniola is similar to that on Cuba (where there are other undescribed species, pers. obs.), it is likely that additional new species of *Kimula* will be found in Hispaniola.

METHODS

We studied material from the collections of the invertebrates of Hispaniola that is deposited in the Instituto de Ecología y Sistemática (IES) of the Ministerio de Ciencia, Tecnología y Medio Ambiente, Havana, Cuba. The nomenclature of the dorsum follows the usage of Maury (1991). We denote the body divisions as: prosoma, mesotergum (areas I, II, III, and IV), lateral margin, and posterior margin (denoted as area V by other authors). Dorsal scute is the sum of the mesotergum and its posterior margin. Measurements are given in mm and were made with a dissecting microscope equipped with an ocular micrometer.

Kimula cokendolpheri new species (Figs. 1–9)

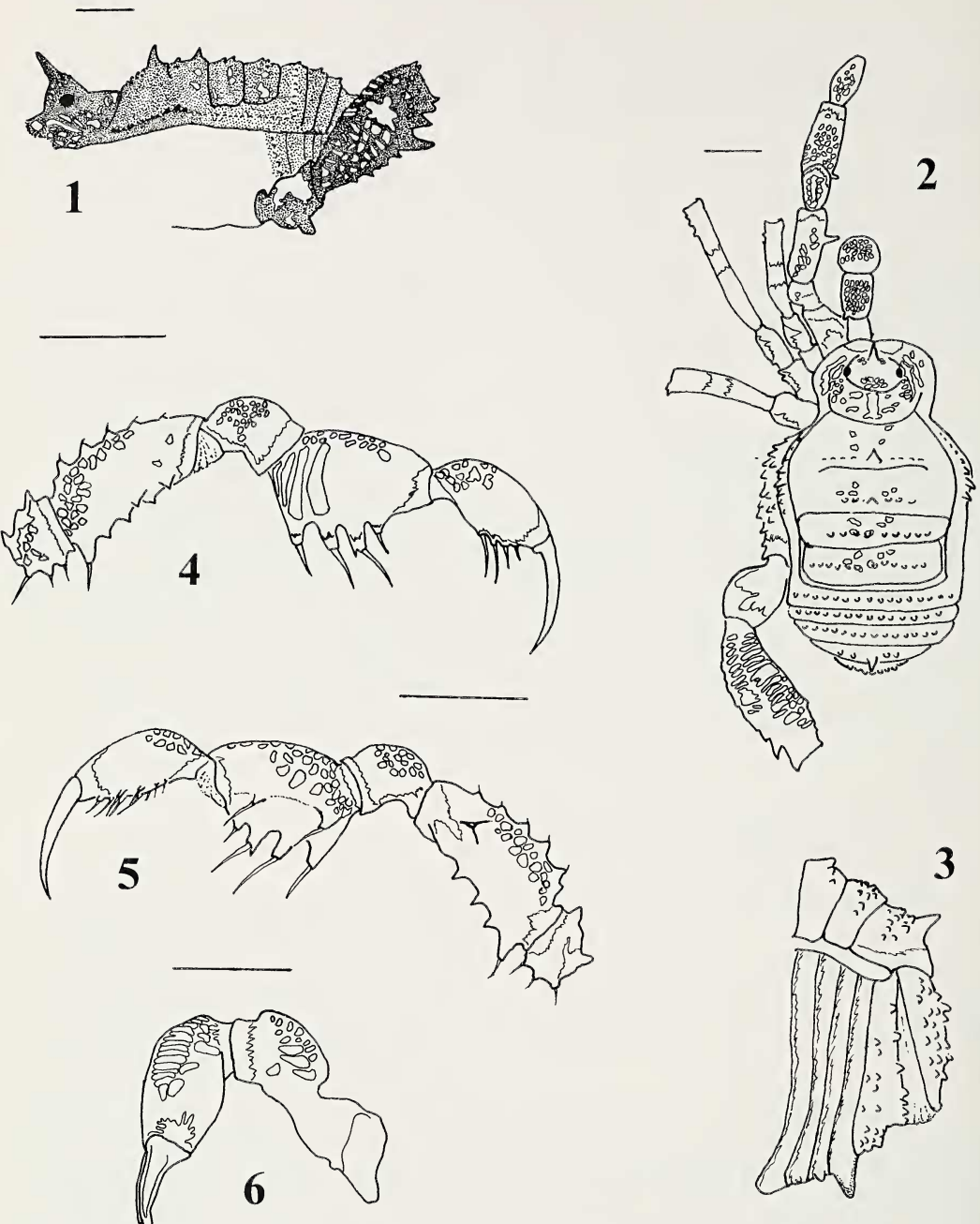
Type specimens.—Male holotype and two male and four female paratypes collected in Casabito, Constanza, provincia La Vega, Dominican Republic beneath stones on 27 September 1987 by A. Abud and L.F. de Armas. Deposited in the IES.

Distribution.—Known only from the type locality.

Etymology.—The specific epithet is a patronym in honor of James C. Cokendolpher, who has studied the opilionid fauna of the Antilles.

Diagnosis.—Total length 5.00 with area I lacking a median line and armed with a stout median spine similar to that of area II. Femurs of the pedipalps armed dorsally with a series of tubercles terminating in setae. Trochanter IV armed with a blunt ventroproximal tubercle. Tarsal formula: 4, 9-13, 5, 6. Distinctive male genitalia as shown in Figs. 7–9. *Kimula cokendolpheri* new species has two characters that are recorded for the first time in this genus: the median spine of areas I and II and the presence of tubercles on the dorsal surface of the femoral palp. These characters permit clear separation of this species from others in this genus.

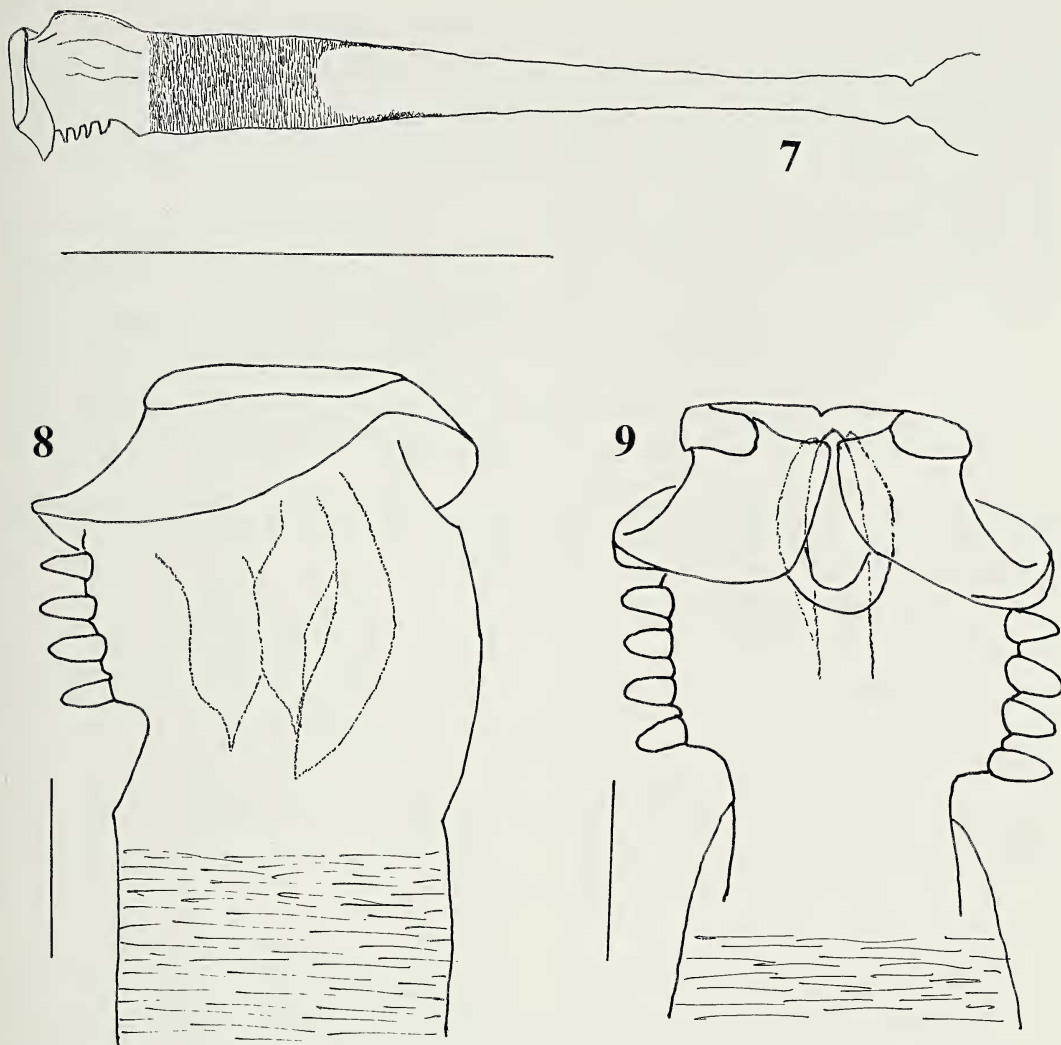
Description.—*Male:* Body brown. The chelicerae, pedipalps, legs, and prosoma bear yellowish patches and in some aspects appear reticulated. Trochanters of legs I, II, and III with dorsal yellowish markings. Ocular tubercle prominent, granular, armored with an erect, anteriorly inclined spine between the eyes (Fig. 1). Areas of the mesotergum distinct, covered irregularly by granules and tu-



Figures 1–6.—External morphology of *Kimula cokendolpheri* new species. 1. Lateral view; 2. Dorsal view; 3. Lateral view of opisthosoma; 4. Retrolateral view of right pedipalp; 5. Prolateral view of right pedipalp; 6. Medial view of right chelicera. Scale bars = 1 mm.

bercles, terminated in a small apical setae, inner areas with similar projections in the form of large spines: the first situated on the central portion of the posterior margin of area I and the second, smaller, occupying the same po-

sition in area II. Area I without a transverse median line. Areas I and II separated by an incomplete furrow. Dorsal scute with sinuous lateral margins and a straight posterior margin; these margins present a longitudinal row



Figures 7-9.—Penis of *Kimula cokendolpheri* new species. 7. Ventrolateral view (scale = 1 mm); 8. Lateral view of extreme distal region (scale = 0.1 mm); 9. Dorsal view of extreme distal region (scale = 0.1 mm).

of tubercles that are more evident and denticulate at the level of furrow II; this region achieves its maximum width at the level of furrow II. Tergites free with a longitudinal row of tubercles terminating in setae. Free tergite III has a median spine (Fig. 2); anal operculum with numerous short tubercles (Fig. 3). Retrolateral surface of coxa III with a distal tubercle, coxa IV very well developed and strongly tuberculated on its prolateral surface. Ventrally, all coxae granulated. Sternites free with a longitudinal row of granules; free sternite IV with a median spiny apophysis; free sternite V with two rows of longitudinal tu-

bercles one at the anterior margin and another on the posterior, separated by a furrow (Fig. 3). Pedipalp (Figs. 4, 5): the coxa has a ventral tubercle with apical setae, dorsally there are two proximal tubercles, one external and one internal; trochanter with five tubercles that possess apical setae, one dorsal and four ventral; femur with five or six small dorsal tubercles that bear fine apical setae, ectolaterally with a tuberculate proximal spine and with four or five tubercles and, on the anterior half of the internal surface, with tuberculate spines having large bases; patella unarmed; tibia ventrally with four tuberculate spines on its ex-

ternal border and two tuberculate spines on its internal border; tarsus with four ventral tuberculate spines on its external border and three ventral tuberculate spines on its internal border. Chelicerae (Fig. 6): basal article with a strong distal elevation on whose outer posterior border there is a small tubercle; distal articles with small tubercles terminated in setae. Legs lack tarsal processes and scopulae; legs I and II with all their articles, except the tarsae (which are unarmed), covered by tubercles that reach their greatest development in the ventral region of the femur. Leg IV is the most well-developed and is strongly armored with tubercles and spines, except for the tarsus, the trochanter has a characteristic blunt ventral tubercle (Fig. 1) and the femur is notably enlarged with a ventral row of strong spines. The patella and the tibia are strongly tuberculate and at their apices have very enlarged and globose ventral tubercles. Tarsal formula: 4(2), 9–13(2), 5(3), 6(3). Male genitalia as shown in Figs. 7–9. Measurements of the male holotype: total length = 5.6; prosoma + scutum = 4.7; maximum width 3.4; leg I = 7.7 (trochanter 0.5, femur 1.7, patella 0.8, tibia 1.3, metatarsus 2.0, tarsus 1.4); leg II = 11.3 (trochanter 0.7, femur 2.4, patella 1.1, tibia 1.8, metatarsus 2.5, tarsus 2.8); leg III = 8.3 (trochanter 0.6, femur 1.7, patella 0.8, tibia 1.4, metatarsus 2.3, tarsus 1.5); leg IV = 12.6 (trochanter 1.0, femur 2.8, patella 1.7, tibia 2.5, metatarsus 2.9, tarsus 1.7).

Female: Similar to the male in appearance, but smaller. The spines are reduced and femur IV differs markedly and is not as enlarged. Trochanter IV has a ventrodistal spine rather than the blunt tubercle characteristic of the male. The free sternite lacks the spiny median apophysis. Measurements of the one female paratype: total length = 4.9; prosoma + scutum = 3.9; maximum width 2.8; leg I = 7.7 (trochanter 0.6, femur 1.5, patella 0.8, tibia 1.2, metatarsus 1.9, tarsus 1.7); leg II = 10.7 (trochanter 0.8, femur 2.2, patella 1.1, tibia 1.6, metatarsus 2.3, tarsus 2.7); leg III = 7.8 (trochanter 0.7, femur 1.5, patella 0.8, tibia 1.3, metatarsus 2.0, tarsus 1.5); leg IV = 11.2 (trochanter 1.1, femur 2.4, patella 1.2, tibia 2.1, metatarsus 2.8, tarsus 1.6).

Natural history.—The specimens studied were collected at an elevation of approximately 1000 m above sea level, beneath stones and in forest litter in a very humid forest at the margins of a stream that abounded in tree ferns.

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LITERATURE CITED

- Avram, S. 1973. Recherches sur les opiliones de Cuba. II. Phalangodidae: *Kimula* (*Metakimula*) *botosaneanue* n. sg., n. sp. In *Résultats de Expéditions Biospéologiques Cubano-roumaines à Cuba*. Bucuresti 1:253–258.
- Cokendolpher, J.C. & G.R. Camilo-Rivera. 1989. Annotated bibliography to the harvestmen of the West Indies (Arachnida: Opiliones). Occasional Papers of the Florida State Collection of Arthropods 5:1–20.
- Cokendolpher, J.C. & G.O. Poinar, Jr. 1992. Tertiary harvestmen from Dominican Republic amber (Arachnida: Opiliones: Phalangodidae). Bulletin of the British Arachnological Society 9(2): 53–56.
- Goodnight, C.J. & M.L. Goodnight. 1942. Phalangids from Central America and the West Indies. American Museum Novitates 1184:1–23.
- Goodnight, C.J. & M.L. Goodnight. 1943. Three new phalangids from tropical America. American Museum Novitates 1228:1–4.
- Maury, E.A. 1991. Gonyleptidae (Opiliones) del bosque subantártico Chileno-argentino I. El género *Acanthoprocta* Loman, 1899. Boletín de la Sociedad de Biología de Concepción (Chile) 62: 107–117.
- Šilhavý, V. 1969. The genus *Kimula* Goodnight and Goodnight from Cuba (Arachnoidea, Opilioniodea). Acta Entomologica Bohemoslovaca 66(6):399–409.

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